# THE SPREADSHEET ASSISTANT

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# THE SPREADSHEET ASSISTANT

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## THE SPREADSHEET ASSISTANT
### Introduction

The electronic spreadsheet was developed from the need for a system to replace the calculator, paper and pencil. The spreadsheet on a computer enables you to take any "number crunching" project that is done in row-and-column format and perform the required tasks in a fraction of the usual time. The spreadsheet is most useful for budgets and financial projections; however, it can also be very useful for balance sheets, income statements and job costing.

One of the primary features of the spreadsheet is the 'recalculation' feature. Every time a value is entered in a 'cell' (one coordinate on the sheet) any other cell which depends on that cell is automatically updated. For example, in a column of figures representing all of your personal expenses for the month, you may have totaled these figures at the bottom of the column. If you were using paper and pencil, changing one of these expense figures would require a recalculation of the total, as well as any other part of your calculations which referenced these expense figures. In THE SPREADSHEET ASSISTANT, these calculations are done automatically.

## THE SPREADSHEET ASSISTANT
### Tutorial

This section is designed to guide you in creating and printing a spreadsheet using THE SPREADSHEET ASSISTANT and your Commodore 64. Our intention here is to help you become comfortable with the program and its functions. Procedures that are discussed here are described in more detail in the manual itself; applicable sections will be noted in brackets ([ ]), so that you may refer to these sections for further information if you choose.

In some cases, the procedure for performing a specific task will be described, without a detailed explanation. Simply follow the instructions, then refer to the appropriate sections for more information.

---

Turn on the Commodore 64, the disk drive, printer and monitor. Put THE SPREADSHEET ASSISTANT program disk in the disk drive (label side facing up). You will see the followig message on the screen:

```
*** COMMODORE 64 BASIC V2 ***
64K RAM 38911 BASIC BYTES FREE

READY
```

Type the following

```
LOAD "SSA", 8
```

and press RETURN.

The following will appear on the screen:

```
SEARCHING FOR SSA
LOADING
READY
```

When the flashing **cursor** (small square) reappears, type:

```
RUN
```

and press RETURN

On the screen you will see the blank spreadsheet form. What you are actually looking at is the upper left corner of a large spreadsheet. See Table 2.1 [Section 2.1] for an explanation of the different parts of the spreadsheet screen.

First experiment with the cursor movement; you will notice that on the spreadsheet itself, the cursor is a short bar which does not flash as it did when you first loaded the program. Press the CRSR keys (located below the RETURN key on the keyboard) to move the cursor either down or to the right. Notice that when you press the right-cursor key on column D, the screen shifts so that Column E is now visible on the right side of the screen, while Column A has 'moved off' the left side of the screen. In the same way, if you press the down-cursor past Row 20, Row 21 appears on the bottom of the screen and Row 1 'moves off' the top of the screen.

**Columns** extend from A to AZ. **Rows** extend from 1 to 200. When the spreadsheet first appears, the cursor is located in Cell A1.

> **Note:** Issuing a command in THE SPREADSHEET ASSISTANT is done with the use of the COMMODORE key; this is the key in the bottom left side of the keyboard with the Commodore logo on it. This key, when used in conjunction with the character keys on the keyboard, helps you to control the information that is entered on the spreadsheet. To enter a command, hold down the COMMODORE key, then press the designated character key, and release both keys simultaneously. In this manual, this procedure is designated like this: COMMODORE-S meaning in this case, hold down the COMMODORE key and press the 'S' key.

To move the cursor to the bottom right hand corner of the spreadsheet (without having to use the cursor keys all the way across) press COMMODORE-J, then enter 'AZ200' and press RETURN. The cursor and screen will jump to Cell AZ200. Notice the Cursor Indicator at the bottom of the screen shows where the cursor is located. Return the cursor to Cell A1 by pressing COMMODORE-J, entering 'A1' and pressing RETURN [Section 3.10].

A **cell** on the spreadsheet can contain a label, a value or a formula. See [Section 2.5] for an explanation of labels, values and formulas.

This tutorial will show you how to create a five-year expense projection. This spreadsheet will enable you to determine what you must earn four years from now to cover your expenses, by

using this year's expenses and projected inflation rates.

First we will enter labels for a spreadsheet title, as well as each expense category [Section 2.1]. Each time you enter any information into a cell, you must press RETURN before moving to another cell, in order for the information to 'take.' Move the cursor to Cell C1. Type 'Five Year,' and press RETURN; then move the cursor to Cell D1, type 'Expense,' and press RETURN. Move the cursor to Cell E1 and type 'Projectio,' and enter 'n' in Cell F1 in the same manner (each cell will only hold nine characters, so you must enter part of the word in two cells).

For expense category labels, enter the following label into the corresponding cell:

| **Cell** | **Label** |
|---|---|
| A3 | EXPENSES |
| A7 | FOOD |
| A8 | CAR |
| A9 | CLOTHES |
| A10 | PHONE |
| A11 | ELECTRIC |
| A12 | INSURANCE |
| A13 | GAS |
| A14 | HEAT |
| A15 | FUN MONEY |
| A17 | TOTAL |
| A19 | INFLA RAT |

Next enter the following Column titles:

| **Cell** | **Title** |
|---|---|
| C5 | YEAR 1 |
| D5 | YEAR 2 |
| E5 | YEAR 3 |
| F5 | YEAR 4 |
| G5 | YEAR 5 |

Now move the cursor back to Cell C5. Notice that the Format Indicator at the bottom of the screen is 'D'; this means that the 'default' format is active. In order to justify the column headings to the right, follow this procedure: with the cursor on Cell C5,

press COMMODORE-F, then press 'R.' The label 'YEAR 1' will now be right-justified within the cell; repeat this procedure for Cells D5-G5 [Section 3.6].

Next you must enter this year's expenses. Before entering these values, press COMMODORE-G, then press 'F' and '$' (SHIFT '4'). This 'global format' procedure will allow each cell to accept the following values in a two-decimal place, dollar format. (Remember to press RETURN after entering each value.) [Section 3.7]

| Cell | Value |
|---|---|
| C7 | 2400 |
| C8 | 1000 |
| C9 | 800 |
| C10 | 360 |
| C11 | 180 |
| C12 | 600 |
| C13 | 720 |
| C14 | 700 |
| C15 | 2000 |

Move the cursor to Row 19, and enter the following projected Inflation Rates:

| Cell | Value |
|---|---|
| D19 | 1.04 |
| E19 | 1.08 |
| F19 | 1.10 |
| G19 | 1.03 |

You now have all your preliminary information entered. The next section will show you the magic of THE SPREADSHEET ASSISTANT. Move the cursor to Cell C17. Here you will enter the formula for totaling Column C. Press COMMODORE-* (asterisk); enter the following:

@TOTAL (C7-C15)

and press RETURN. The total itself will appear in Cell 17; the formula you entered will display on the prompt line [Section 3.5].

Next copy this 'total' formula into Cells D17 to G17. With the cursor in Cell C17, press COMMODORE-K, then press RETURN

in response to the 'Source Range or RETURN' prompt. In response to the 'Target Range' prompt, type

D17-G17

and press RETURN. At the 'Relative or No Change (R/N)' prompt, press 'R'; this will perform the 'total formula' in Column D for Cells D7-D15, in Column E for Cells E7-E15, etc. [Section 3.8].

Now move the cursor to Cell D7, and press COMMODORE-*. Enter the following formula:

C7*D19

and press RETURN. The value '2496.00' will appear in Cell D7 (the product of multiplying the values in those two cells). This is the effect of a 4% inflation increase in Year 2 on the cost of food.

Because we want each expense to reflect this inflation rate, you can use the copy command instead of entering the same formula in each location. With the cursor on Cell D7, press COMMODORE-K; at the 'Source Range or RETURN' prompt, press RETURN. At the 'Target Range' prompt, enter

D8-D15

and press RETURN. At the 'Relative or No Change' prompt for Cell C7, enter 'R'; enter 'N' for no change on Cell D19.

> **Note:** Cell D17 now shows the current total for Column D, since the formula to perform this total had already been entered. Notice also that values are displayed in Cells D7-D15 as soon as the copy command is completed.

Next, the information in Column D must be copied into Column E, relative to that year's inflation rate. With the cursor on Cell D7, press COMMODORE-K; at the 'Source Range or RETURN' prompt, press RETURN. At the 'Target Range' prompt, enter

E7-G7

and press RETURN. In response to the 'Relative or No Change' prompt for Cell C7, enter 'R'; also enter 'R' for Cell D19.

Move the cursor to Cell D8 and repeat the process in the previous paragraph (except that the 'Target Range' will now be 'E8-G8'). Continue in the same manner for each of Cells D9 through D15.

When you have finished the copy process for Row 15, your spreadsheet should look the same as the spreadsheet in Figure 1, page 15.

To print your spreadsheet, first be sure your printer is turned on (You may need to configure your printer first [Section 1.1]). Move the cursor to Cell A1; press COMMODORE-P. At the prompt, enter the following:

G20,F

and press RETURN. This will print the spreadsheet you just created, as well as the column headings and labels for each column [Section 3.11].

Now that you have created your own spreadsheet, you can experiment with one of the most powerful features of THE SPREADSHEET ASSISTANT - the recalculation feature. This feature will recalculate any formula when a cell which uses that formula is changed. **For example,** move the cursor to Cell C7, and enter the value '2800' in the cell and press RETURN. Notice the changes that occur in Cells D7-G7 and the column totals, since each of these cells had a formula based on the value in Cell C7. You can experiment by changing any of the values in Column C, or any of the inflation rates, and notice the effect of the changes on the other cells of the spreadsheet.

---

We hope that this tutorial has helped you become comfortable with THE SPREADSHEET ASSISTANT, and has demonstrated how easy it is to use this powerful program.

1.0
## What You Need

To use THE SPREADSHEET ASSISTANT, you need a Commodore 64, a 1541 Disk Drive, a monitor and a properly interfaced serial or parallel printer. You also need a Disk Reference Manual to interpret any disk error codes the system may display.

It is possible to store the spreadsheets you create on THE SPREADSHEET ASSISTANT program disk. However, to lessen the possibility of damage to the program disk by using it this way, we suggest you format your own data disks (see COMMODORE-S, Section 3.13). The system assigns the device number '8' to the first disk drive, '9' to the second drive, '10' to the third disk drive and '11' to the fourth disk drive.

1.1
## Configuring the Printer

In order for communication to take place between the Commodore 64 and your printer (i.e., printing spreadsheets), certain information about the printer must be stored on THE SPREADSHEET ASSISTANT program disk. This 'configuration' need only be done once, and will not change unless you change printers.

The values necessary for the following procedure are in your printer interface reference manual.

Turn on the Commodore 64, monitor and disk drive. Insert THE SPREADSHEET ASSISTANT program disk in the disk drive, label side facing up, and type the following

LOAD"CONFIG,"8 and press RETURN. At the READY prompt, type 'RUN' and press RETURN again.

Enter the Device Number of the printer; allowable values are '2,' '4,' or '5.'

At the bottom of the screen, you will see the following default 'OPEN' statement:

OPEN 4,4,0,CHR$(0)+CHR$(0)

After you enter the device number and press RETURN, the number you entered will replace the second '4' in this statement.

Next enter the Secondary Address and press RETURN. This number will replace the first '0' in the 'OPEN' statement above.

Next enter the value for Character String 1 and press RETURN. This number will appear in the first set of parentheses in the 'OPEN' statement above.

Then enter the value for Character String 2 and press RETURN. This number will appear in the second set of parentheses in the 'OPEN' statement above.

The last step is to specify if your printer is an ASCII printer. If you enter 'y,' all of the information that you print will be converted to ASCII character standards.

Press RETURN. The OPEN statement with the values you entered will appear at the bottom of the screen. To save this configuration, press 'y.' To correct any values, enter 'n'; the system will then return to the 'Enter Device Number' prompt.

After the system has saved this printer configuration, you can proceed with loading THE SPREADSHEET ASSISTANT program [Section 2.0].

2.0
**How to Get Started**
Turn on your Commodore 64, printer, disk drive and monitor. Place THE SPREADSHEET ASSISTANT program disk in the first disk drive with the disk label facing up. Type the following:

LOAD "SSA,"8

and press RETURN.

When the disk has stopped spinning and the red light on the disk drive goes off, the screen will display a READY prompt and a blinking cursor (small flashing square). Type RUN and press RETURN, and the system will display the format for the spreadsheet as shown in Table 2.1.

2.1
**Spreadsheet Features**
**[Table 2.1]**
THE SPREADSHEET ASSISTANT contains up to 52 vertical **columns** (A) labelled A-AZ and up to 200 horizontal **rows** (B). Each cell of the spreadsheet is identified by the column and row that intersect with the cell, e.g., Cell C2 is at the intersection of Column C with Row 2.

In the lower right corner of the screen, a Memory Indicator (C) shows the percentage of available memory remaining. This indicator starts at 99% and decreases as you enter data, although some entries may appear to have no effect on this percentage (entering one number in a cell will not necessarily change 99% to 98%).

The bottom two lines of the screen (D) are the edit lines, and display the information that has been entered for the specified cell. These two lines will accept up to 78 characters; however, the cell itself will only hold as many characters as have been specified for that column width. **For example,** you may enter a label such as 'Annual Interest Paid' in cell A3; but if column A is only 9 characters wide, 'Annual In' is the only part of the label that will appear on the spreadsheet.

Each cell can contain a label, a value or a value derived from a formula. The Status Line (E) indicates if the cell is a label or a value. A **label** is a cell containing alphabetic characters, or numbers that

will have no arithmetic function, **for example,** 'Interest,' 'Rent,' '1982-83,' '2nd year.' A **value** in a cell may contain only numerals or arithmetic functions on other cells, **for example,** '500.00,' '4+C2,' '300,' 'B4*A1.' Calculations that can be entered in the cells are as follows:

+ Addition
- Subtraction
* Multiplication
/ Division
^ Exponentiation

The Cursor Indicator (F) shows the position of the cursor at any time by cell. The Format Indicator (G) on the prompt line shows the format for the specified cell.

2.2
**Cursor Control**
To move the cursor from cell to cell, use the cursor control keys (bottom right hand of the keyboard) labelled 'CRSR' with two directional arrows on each. By using these keys by themselves or in conjunction with the SHIFT key, you can move the cursor up, down, left or right on the screen as you choose, either one space/line at a time or, if you hold the key down, several spaces/lines in succession. While editing the information in a cell or creating a formula, these keys will control the cursor on the edit lines.

The INST/DEL key on the top right-hand of the keyboard, will delete the character immediately to the left of the cursor. If you press the SHIFT key in conjunction with the INST/DEL key, the system will insert blank space(s) to the right of the cursor, moving the remaining text over accordingly.

2.3
**Screen Color**
To change the color of the border and characters on the spreadsheet, use the **function** keys (large keys on the right side of the keyboard). F2 (press the SHIFT key and F1) changes the border color; F4 (SHIFT key and F3) changes the character color.

2.4
**Labels, Values, and Formulas**

In each cell of THE SPREADSHEET ASSISTANT you can enter either a label, a value or a formula.

A 'label' (L on the Status Line) is a word or phrase, such as 'Personal Expenses,' 'Gross Pay,' or 'September.' As soon as one alphabetic character is entered in the cell, THE SPREADSHEET ASSISTANT identifies that cell as a label, and will not attempt to perform any mathematical calculations on that cell.

A 'value' ('V' on the Status Line) is a numeric figure. It can be a dollar amount such as '50.00,' or a real number such as '23'. When a value is entered in a cell, THE SPREADSHEET ASSISTANT identifies it as such and will perform the necessary mathematical calculations on that cell.

A 'formula' ('F' on the Status Line) is any mathematical operation which, in normal operations would be resolved by an equals ('=') symbol. **For example,** if you want a sum of the values entered in cells A1, B1 and C1 to appear in cell D1, you would move the cursor to cell D1 and enter the following formula:

A1+B1+C1

and press RETURN. The Status Line will display this formula, and cell D1 on the spreadsheet will display the result of this formula. If the value of A1, B1 or C1 is changed, the change will be reflected in the sum which appears in D1.

To enter labels or values in a cell move the cursor to the desired cell, type in the label or value and press RETURN. To edit or change a label, formula or a value see COMMODORE-E, [Section 3.4]. To enter formulas in a cell, see COMMODORE-* [Section 3.5].

> **Note:** To enter a label which begins with a number, such as '1983' or '3rd,' first press the " (double quote) key. This will change the status line indicator to 'L' to show that those numerals should be accepted as labels, not values.

3.0
**Special Function Keys**
Many of the regular keys on the keyboard perform special functions when used in conjunction with the COMMODORE key, labelled with the Commodore 'C' logo on the bottom left-hand side of the keyboard. These functions are explained in detail on the following pages. To utilize these functions, hold down the COMMODORE key, then press the indicated letter key, and release them simultaneously. Such a procedure will be indicated like this:

COMMODORE-S

meaning hold down the COMMODORE key and the 's' key.

> **Note:** This section is not intended as a tutorial, but simply as a detailed reference and explanation to the various functions THE SPREADSHEET ASSISTANT can perform. Each function contains a brief explanation as to how it works. For the procedure involved in setting up and beginning a spreadsheet, see 'THE SPEADSHEET ASSISTANT Tutorial,' in the beginning of this manual.

> **Note:** Before performing any of these functions, move the cursor to the desired cell using the cursor control (CRSR) keys.

**FUNCTION** **COMMAND KEY**

3.1
**Erase** **COMMODORE-B**
Erase the contents of a cell by pressing COMMODORE-B.
If you erase a cell which is used in a formula for another cell, the value for the second cell will change to 0.

3.2
**Clear** **COMMODORE-C**
Clear the contents of **all** cells and return the cursor to cell A1 by pressing COMMODORE-C.

3.3
**Delete** **COMMODORE-D**
Delete an entire row or column by moving the cursor to any cell in the row or column you want to delete and pressing

COMMODORE-D. The prompt line will ask if you are deleting a row or a column; press 'R' for a row, 'C' for a column. Then enter the number of rows or columns you are deleting. If you do not enter a number and just press RETURN at this prompt, the system assumes you are deleting only 1 row or column.

If you delete a row or column that affects a formula or reference to a formula, the system will make the appropriate adjustment. **For example,** if you have deleted Row 9, Row 10 will be moved up one row, and formulas referencing that row will be changed accordingly ('B10*4' will now read 'B9*4'). See Figures 2 and 3.

3.4
**Edit Values/Labels/Formulas COMMODORE-E**
Edit/change values, labels and formulas in a cell using this 'Edit Mode.'

Move the cursor to the appropriate cell and press COMMODORE-E. The contents of this cell will appear on the prompt line, along with the cursor, so any necessary changes can be made.

> **Note:** To enter a label or value for the first time, type the desired label/value and press RETURN. Do not use the COMMODORE-E function. A label will always be left-justified, i.e. the first letter will appear in the far left side of the cell; a value will always be right-justified, i.e. the last number will appear in the far right side of the cell. If you wish to change these **default** formats, use the COMMODORE-F or COMMODORE-G functions below.

3.5
**Add Formulas COMMODORE-***
Add formulas in a specific cell by moving the cursor to the desired cell and pressing COMMODORE-* (asterisk). The contents of the cell will appear at the bottom of the screen so you may make the necessary changes. In this 'Formula Mode,' a formula is valid only if it contains one of the following arithmetic function symbols:
function symbols:

( ) parentheses
\+ addition

- subtraction
* multiplication
/ division
^ exponentiation
0-9 numeric values

**For example,** you can enter

A1*(B1/(A6+B6))*1.06

where A1, B1, A6, and B6 reference the values contained within those cells.

An example of an invalid formula is

A1*-10

since you may not have two operation symbols side-by-side. Also, all cell references must be valid, i.e., reference a cell that actually contains data. If you enter an invalid formula, the system will display the formula in the cell, and the status line will read 'F.' To correct an invalid formula, use COMMODORE-*. If you enter a formula which references a cell containing no data, the results of the formula will be '0' (zero) until the referenced cell is corrected.

> **Note:** Use the COMMODORE-E function to edit formulas you have already entered into the cell.

3.6

**Format** **COMMODORE-F**

Individual cells may be defined to display data in several different formats: dollar format (two decimal places), left-justified, right-justified, global (all cells will be displayed the same way), and column-width variation. Move the cursor to the desired cell, press COMMODORE-F and respond to the screen prompt with one of the following format variables:

I integer
$ two-decimal dollar format
L left-justified
R right-justified
G return to global format
(see COMMODORE-G, Option F)

and press RETURN. This will format **only** the cell the cursor is on, and will not affect other cells.

3.7
**Global Formatting** **COMMODORE-G**

'Global' refers to any function which will affect the spreadsheet as a whole, instead of just the cell, row or column you are working on. For example, you may choose to have every cell appear in left-justified form, dollar-and-cents form, etc., without having to specify this for each cell.

When THE SPREADSHEET ASSISTANT is originally loaded, it is set at automatic recalculation, meaning the spreadsheet is recalculated each time a value or formula is entered. To change this format, press COMMODORE-G, then press 'C.' Following the prompt, enter 'A' or 'M.' Enter 'M' (Manual) if you want the system to recalculate only when you press COMMODORE-@. To return to the automatic recalculation format, press COMMODORE-G followed by 'C,' then 'A' for Automatic. The entire spreadsheet will be recalculated every time a value or formula is entered.

To give instructions about the **order** of recalculation, press COMMODORE-G then 'O' (letter O not number zero) for Order of Recalculation. Press 'R' and the system will calculate all the rows first; press 'C' and the system will calculate all the columns first.

To **format** the spreadsheet, press COMMODORE-G and 'F' for Format. Press '$' and all numerical values will be formatted in two-decimal dollar and cents; press 'L' for left-justified columns; press 'R' for right-justified columns.

You may override the format you have specified here for a given cell by using the COMMODORE-F command. If you have previously used the COMMODORE-F command on a cell, the COMMODORE-G function will not override this command.

To change the **column widths,** press COMMODORE-G and 'W' for column widths. Enter a number from 1 to 20 to specify the width of your columns. This will change the width of all columns.

3.8
**Copy** **COMMODORE-K**

The process of **copying** on THE SPREADSHEET ASSISTANT takes

two basic forms. The first is the same type of copying you have used in the past: taking a piece of information from one location and duplicating it in another location, so that both pieces of information are identical. In THE SPREADSHEET ASSISTANT, this may be done with labels, values and formulas.

The second form of copying can best be illustrated by the following example:

> In January, your utility bill is $100.00. The power company in your area has announced that they will be forced to increase their rates by 10% per month over the next three months. In February, then, your bill is $110.00 ($100.00 plus 10% of $100.00). In March, this increases by another 10%; but now it's a 10% increase of February's $110.00 or $11.00, making your bill $121.00. In April, the 10% increase is calculated on March's $121.00 bill, and becomes $133.10. So the 10% increase is determined **relative** to the previous month, instead of being based strictly on January's bill.

In THE SPREADSHEET ASSISTANT, only formulas may be copied in this relative form; text information will not change relative to the previous cell, e.g., 'January' is still 'January,' and cannot be made to increment to 'February.'

> If you have a formula which uses two or more cells as variables within the formula, you must determine if each cell is to be copied in **identical** form or **relative** form. **For example,** you are analyzing sales figures over several months, based on an estimated 6% increase per month. Your first month's sales of $1,000.00 are in cell B3; the value of a 6% increase, (multiplying by 1.06), is in cell A3. The formula to calculate the succeeding months' sales will be entered into cell C3, and then copied from cells D3 to L3 and reads 'A2*B2.' In copying this formula into the next several cells, the **percentage of increase** remains the same (1.06), but the **value** resulting from that increase is **relative** to the preceding month. So 'A3' is copied in **identical** form, and 'B3' is copied in **relative** form.

Copying may be performed from one cell to another cell (A1 to B1), from one cell to several cells (C3 to D3 through L3, as in the

example above), or from several cells to several cells (cells A1-A15 to the cells G1-G15). The cell(s) the copy command originates from are called the **source;** the cell(s) which are copied to are called the **target.**

To copy a cell, move the cursor to the first cell that you want to copy and press COMMODORE-K. The prompt line will prompt 'Enter source range or press RETURN.' If you are copying a range of (several) cells, enter the last cell that you are copying. (A range must be within a row or column; copying a range may not be done diagonally.) If you are just copying the cell where the cursor is, press RETURN. If your source cell contains a formula, you may only copy that cell, not a range.

When you press RETURN, the system then asks for the 'Target Range' or the cell you are copying to. Enter the target cell's location or the range of cells, entering the first cell number followed by a hyphen and the last cell number, e.g. 'A20-H20,' and press RETURN.

Next, if the cell contains a formula, then for each cell reference in the formula the system will ask if the copy is to be 'Relative or no change.' If the cell contains a label or a value, the relative/identical prompt does not apply, and will not be displayed.

For a detailed example of this copy function, see Figures 4 & 5, page

3.9

**Insert** **COMMODORE-I**

Insert blank rows or columns at any point on your spreadsheet by moving the cursor to any point on the row or column where you wish the blank space to appear and pressing COMMODORE-I. At the prompt, type 'R' if you want to insert a row or 'C' to insert a column. Then type the number of rows/columns that you want to insert; if you do not enter a number here and just press RETURN, the system assumes that you are inserting one row/column. When you press RETURN, the remaining rows/columns will be moved down/over accordingly.

Occasionally, inserting a row/column will affect a formula or

reference to a formula. In this case, the coordinates in the formula will be changed accordingly. **For example,** if the formula for column C is '(B1+A1)*.5,' and you insert a blank column at column B: column B will now be blank, the information that was in columns B and C has been moved over to columns C and D, and the formula for the original column C (which is now in column D) reads '(C1+A1)*.5' (See Figures 2 & 3).

3.10

**Jump Cursor** **COMMODORE-J**

You may move (jump) the cursor to another coordinate without having to use the cursor keys, a great help if you are moving clear across the spreadsheet. Press COMMODORE-J and enter the coordinates of the cell you wish to move to. **For example,** if the cursor is at A4 and you want to 'jump' to AC190, press COMMODORE-J and at the prompt enter 'AC190' and press RETURN..

3.11

**Print** **COMMODORE-P**

You can print all or part of a spreadsheet using this function. Think of the spreadsheet or section of the spreadsheet you are printing as a square. The printing procedure will begin at the upper left hand corner of the spreadsheet, and end at the lower right hand corner; these are the cell coordinates you will enter when specifying the section of the spreadsheet to be printed. Position the cursor at the first cell to be printed (this is usually 'A1,' but need not be); press COMMODORE-P. At the prompt enter the last cell to be printed, and press RETURN. To print the mathematical formula at the top of each column, enter 'F' after entering the last cell to be printed, then press RETURN. Thus, the print command to print coordinates A1 to D45, showing the column formulas, would be entered like this:

(Cursor on cell A1) [COMMODORE-P] D45,F [RETURN]

3.12

**Quit** **COMMODORE-Q**

To quit the spreadsheet at any time, press COMMODORE-Q, then 'Y' at the screen prompt. If you decide not to exit the program at this time, press any other character at the prompt, and the 'quit' will be cancelled.

3.13

**Save or Load COMMODORE-S**

There are several different ways to save (store) and load (retrieve) spreadsheets to or from your data disk. These involve assigning a name by which your spreadsheet will be identified, called a filename. Filenames may be up to 16 characters long, but for the sake of convenience, you may want to keep it shorter so that it is easier to remember and faster to enter.

The functions available using the COMMODORE-S command are listed below. This notation — [filename] — indicates where you should enter the filename you have assigned the spreadsheet.

**L [filename]**
Load the indicated spreadsheet from the data disk.

**S [filename]**
Save the spreadsheet currently on the screen under the indicated filename.

**F**
Format a new data disk. At the prompt, press 'Y' to indicate that you want to format a disk. **Then** remove THE SPREADSHEET ASSISTANT program disk from the drive and insert a blank disk in the drive and press RETURN. At the prompt you can change the displayed disk name and identification number, or press RETURN to continue. **When the red disk drive light goes out,** you will be able to save data onto the disk.

**R [filename]**
Remove (delete) the indicated file from the disk.

**W**
Output spreadsheet data to the disk in WRITER'S ASSISTANT format. Before pressing COMMODORE-S, move the cursor to the first cell of the data you wish to store in WRITER'S ASSISTANT format. Press COMMODORE-S, then press 'W.' At the screen prompt, enter a filename, followed by a hyphen and the last cell coordinate in the lower right that you wish to store. This filename will be used in THE WRITER'S

ASSISTANT command CONTROL-V, 'Load Any Sequential File.' You may store the spreadsheet data on THE SPREADSHEET ASSISTANT data disk or on THE WRITER'S ASSISTANT data disk.

3.14
**Version** **COMMODORE-V**

To display the version of THE SPREADSHEET ASSISTANT that you are using, press COMMODORE-V. The version number appears on the prompt line. Press RETURN to continue.

3.15
**Disk Directory** **COMMODORE-+**

To view the names of spreadsheet files that are stored on any data disk, press COMMODORE-+. The first filename will appear on the prompt line; press '+' again to bring up the next filename. When the last filename has been displayed, the prompt line will clear and the cursor will return to the spreadsheet.

3.16
**Total** **@TOTAL**

The @TOTAL function allows you to total a row or a column in a specific cell. Instead of entering the formula 'A1 + A2 + A3 + A4 + A5' in cell A7 you can enter '@TOTAL (A1 - A5)' and it will produce the same result.

Table 2.1

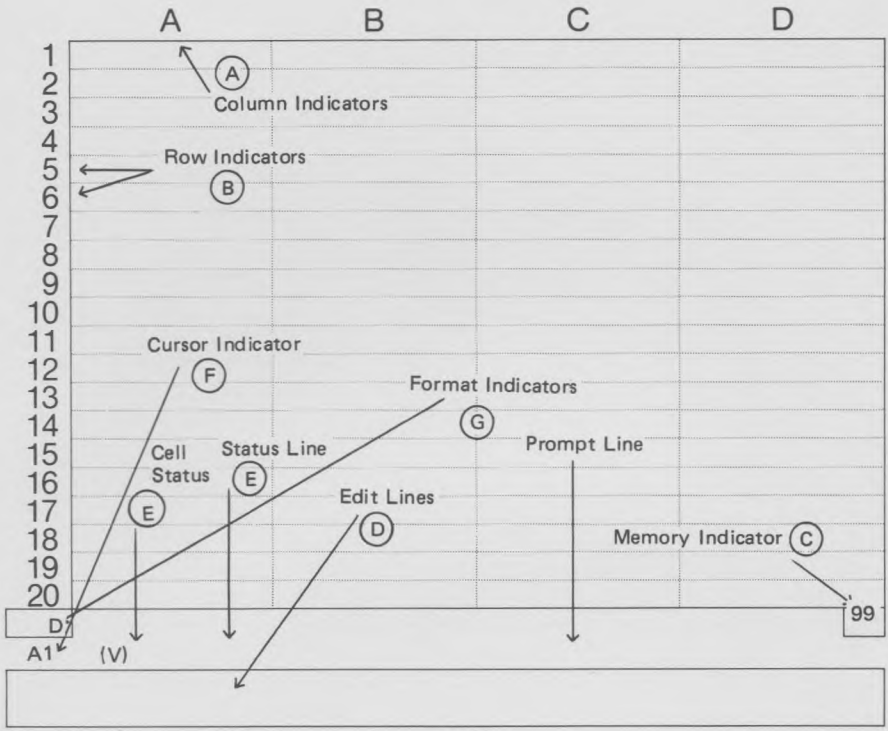

A
B
C
D
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
A
Column Indicators
Row Indicators
B
Cursor Indicator
F
Format Indicators
G
Cell
Status
E
Status Line
E
Prompt Line
Edit Lines
D
Memory Indicator
C
99
D1
A1
(V)

**Figure 1**
**Sample Spreadsheet**
Results of Tutorial

| | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| 1 | | | FIVE YEAR EXPENSE PROJECTION | | | | | |
| 2 | EXPENSES | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | YEAR 1 | YEAR 2 | YEAR 3 | YEAR 4 | YEAR 5 | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |
| 7 | FOOD | | 2400.00 | 2496.00 | 2695.68 | 2965.25 | 3054.21 | |
| 8 | CAR | | 1000.00 | 1040.00 | 1123.20 | 1235.52 | 1272.59 | |
| 9 | CLOTHES | | 800.00 | 832.00 | 898.56 | 988.42 | 1018.07 | |
| 10 | PHONE | | 360.00 | 374.40 | 404.35 | 444.79 | 458.13 | |
| 11 | ELECTRIC | | 180.00 | 187.20 | 202.18 | 222.39 | 229.07 | |
| 12 | INSURANCE | | 600.00 | 624.00 | 673.92 | 741.31 | 763.55 | |
| 13 | GAS | | 720.00 | 748.80 | 808.70 | 889.57 | 916.26 | |
| 14 | HEAT | | 700.00 | 728.00 | 786.24 | 864.86 | 890.81 | |
| 15 | FUN MONEY | | 2000.00 | 2080.00 | 2246.40 | 2471.04 | 2545.17 | |
| 16 | | | | | | | | |
| 17 | TOTAL | | 8760.00 | 9110.40 | 9839.23 | 10823.16 | 11147.85 | |
| 18 | | | | | | | | |
| 19 | INFLA RAT | | | 1.04 | 1.08 | 1.10 | 1.03 | |
| 20 | | | | | | | | |

**Figure 2**
**Delete Sample**
Before COMMODORE-D command is entered

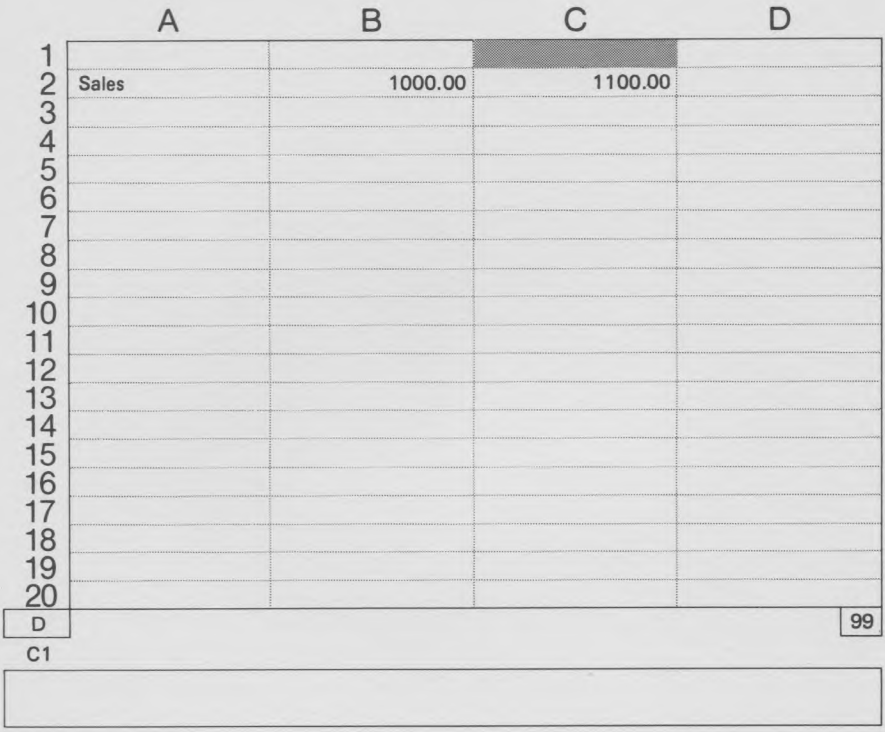
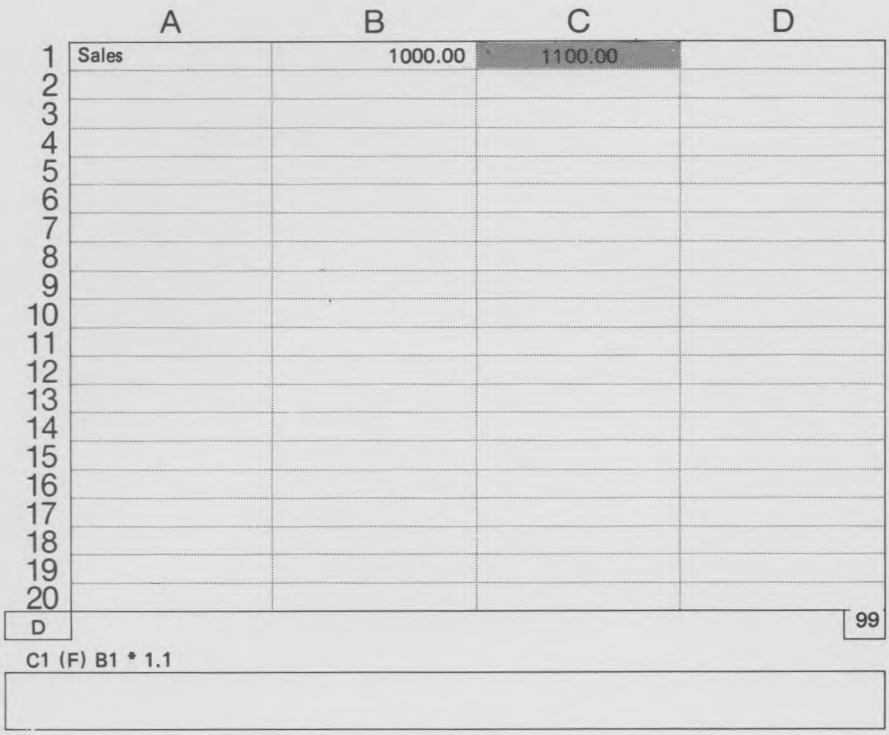


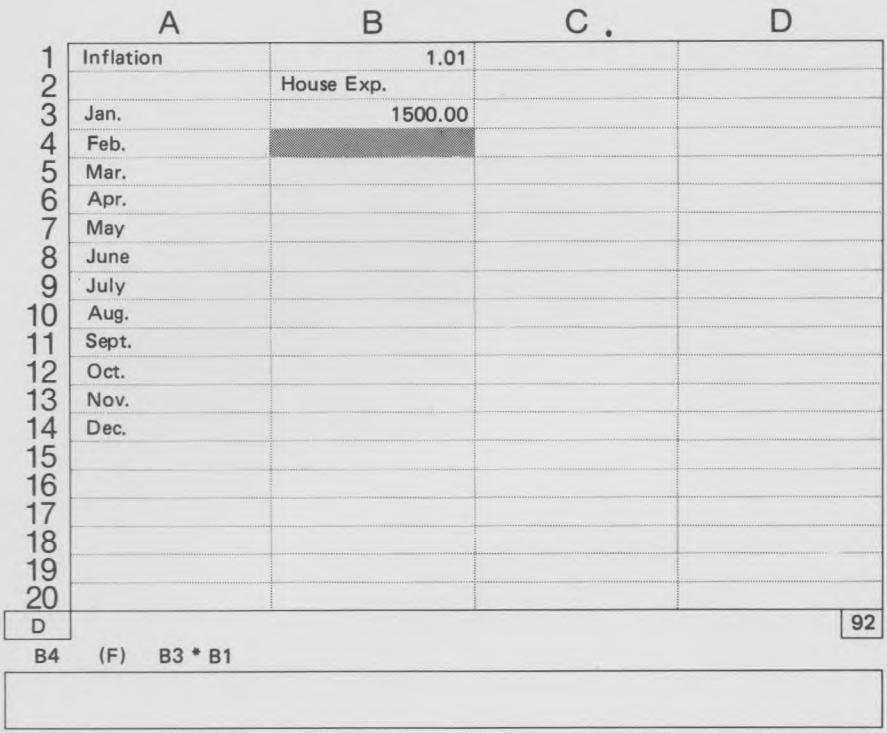
**Figure 3**
**Delete Sample**
After COMMODORE-D command is entered




In Figures 2 and 3 you see the effect of deleting a blank row in a spreadsheet. Notice in Figure 3, the row that was Row 2 in Figure 2 is now Row 1. However, this is not the only change in the spreadsheet. If Cell C2 contained the formula 'B2*1.1,' the delete command will 'update' this formula to reflect the change in its position on the spreadsheet, so that it now reads 'B1*1.1.'

The process reverses during an insert command. If a blank row were re-inserted at Row 1 in Figure 3, the spreadsheet would look like Figure 2 again, with the accompanying change in the formula in Cell C2.

**Figure 4**
**Copy Command (COMMODORE K)**
Before COMMODORE-K command is entered



| | A | B | C | D |
|---|---|---|---|---|
| 1 | Inflation | 1.01 | | |
| 2 | | House Exp. | | |
| 3 | Jan. | 1500.00 | | |
| 4 | Feb. | | | |
| 5 | Mar. | | | |
| 6 | Apr. | | | |
| 7 | May | | | |
| 8 | June | | | |
| 9 | July | | | |
| 10 | Aug. | | | |
| 11 | Sept. | | | |
| 12 | Oct. | | | |
| 13 | Nov. | | | |
| 14 | Dec. | | | |
| 15 | | | | |
| 16 | | | | |
| 17 | | | | |
| 18 | | | | |
| 19 | | | | |
| 20 | | | | |

D 92

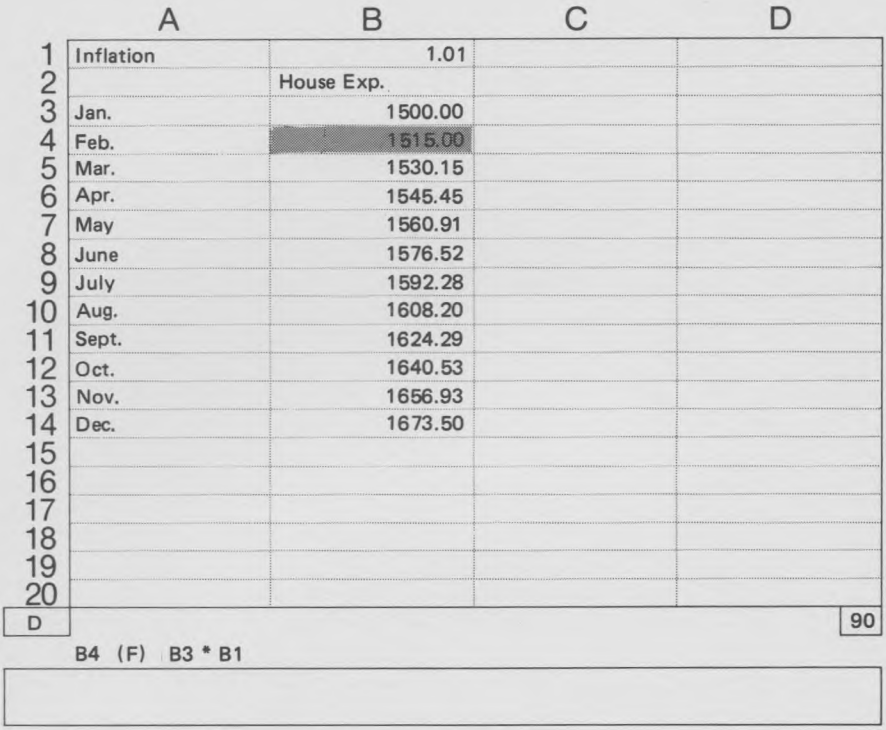
B4 (F) B3 * B1

Figures 4 and 5 illustrate the effect of using the copy command in THE SPREADSHEET ASSISTANT. The purpose of the copy function is to reduce the effort in entering duplicate information.

This sample will project monthly household expenses, based on two facts: that January's expenses were $1500.00, and the inflation rate is 1% per month. January's household expenses of $1500.00 are entered in cell B3; the mathematical representation of a 1% inflation increase per month (1.01) is in cell B1. The formula for calculating the 1% inflation increase starting with February is entered into cell B4 as 'B3*B1.'*

The next step is to copy the formula in B4 down the column for the remaining months, March-December, following these steps (brackets - [ ] - indicates the commands to enter):

**Figure 5**
**Copy Command (COMMODORE-K)**
After COMMODORE-K command is entered



| | A | B | C | D |
|---|---|---|---|---|
| 1 | Inflation | 1.01 | | |
| 2 | | House Exp. | | |
| 3 | Jan. | 1500.00 | | |
| 4 | Feb. | 1515.00 | | |
| 5 | Mar. | 1530.15 | | |
| 6 | Apr. | 1545.45 | | |
| 7 | May | 1560.91 | | |
| 8 | June | 1576.52 | | |
| 9 | July | 1592.28 | | |
| 10 | Aug. | 1608.20 | | |
| 11 | Sept. | 1624.29 | | |
| 12 | Oct. | 1640.53 | | |
| 13 | Nov. | 1656.93 | | |
| 14 | Dec. | 1673.50 | | |
| 15 | | | | |
| 16 | | | | |
| 17 | | | | |
| 18 | | | | |
| 19 | | | | |
| 20 | | | | |



| **Enter** | **Prompt Line Display** |
|---|---|
| 1) [COMMODORE-K] | COPY: Source Range or RETURN |
| 2) [RETURN] | COPY: Target Range |
| 3) B3-B13 [RETURN] | B1: Relative or No Change (R/N) |
| 4) N [RETURN] | B3: Relative or No Change (R/N) |
| 5) R [RETURN] | |

Figure 5 shows the results of this procedure. With the cursor (shaded cell) in B4, the prompt lines at the bottom show what cell the cursor is in (B4) and the formula that has been entered.

## QUICK REFERENCE GUIDE

| COMMAND KEY | FUNCTION |
|---|---|
| COMMODORE-B | Blank a cell |
| COMMODORE-C | Clear entire spreadsheet |
| COMMODORE-D | Delete row/column |
| COMMODORE-E | Edit contents of a cell (label, value or formula) |
| COMMODORE-* | Enter formula in a cell |
| COMMODORE-F | Format a specific cell |
| COMMODORE-G | Change column widths<br>Global format of all cells<br>Change order of recalculation |
| COMMODORE-I | Insert row/column |
| COMMODORE-J | Jump to a specific cell |
| COMMODORE-K | Copy contents or formulas in a cell |
| COMMODORE-P | Print spreadsheet and/or formulas within the spreadsheet |
| COMMODORE-Q | Quit program |
| COMMODORE-S | Save a spreadsheet<br>Load a spreadsheet<br>Remove spreadsheet from the disk<br>Format a disk<br>Initialize a disk<br>Close a file<br>Output to WRITER'S ASSISTANT format |
| COMMODORE-V | Display version number |
| COMMODORE-+ | Display disk directory |

## SPREADSHEET ASSISTANT
## Rules of the Program

1) If a formula references a blank cell the value in that reference will be assumed to be 0.

2) If a formula references a cell that contains a label the cell will be in error.

3) If a formula references a cell that is in error it too will be marked error.

4) If you are 'K'opying a formula you must specify the same cell coordinate for the Source range (i.e., A1-A1).

5) When merging two spreadsheets, (the first one on the screen with the second one stored on the disk), use the COMMODORE-S-L sequence to load the second spreadsheet. If the two spreadsheets have any coordinates in common, the coordinates from the second spreadsheet take precedence over those from the first spreadsheet. For example, if both spreadsheets use cell B6, the value, formula or label in B6 in the second spreadsheet will replace cell B6 in the first spreadsheet.

6) When printing a spreadsheet (or saving in Writer's Assistant format) you get just what you see on the screen.

7) If a value will not fit in the cell with the current column width (i.e. 99999.99 with a column width of 5) the cell will display *'s.

8) If you set a global format and there are individual cells that currently are set to a specified format the global format will not override it.

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